Amendments to the Claims:

1.   (Currently Amended) A method for defining quadrature-axis magnetizing inductance of a synchronous machine when the synchronous machine is fed with an inverter, ~~characterized~~ wherein ~~in that~~ the method comprises the steps of
    starting the synchronous machine without load or with reduced load,
    keeping the rotor current of the synchronous machine substantially at zero,
    accelerating the synchronous machine to initial angular velocity of measurement,
    controlling the load angle (δ_s) of the synchronous machine substantially to 90 degrees,
    defining the stator voltage ($\overline{u}_s$), the stator current ($\overline{i}_s$) and the electrical angular velocity (ω) of the synchronous machine, and
    defining the quadrature-axis magnetizing inductance (L_{mq}) of the synchronous machine on the basis of the stator voltage ($\overline{u}_s$), the stator current ($\overline{i}_s$) and the electrical angular velocity (ω) of the machine.

2.   (Currently Amended) A method as claimed in claim 1, ~~characterized~~ wherein ~~in that~~ the start-up of the synchronous machine comprises a step of starting the synchronous machine at reduced flux.

3.   (Currently Amended) A method as claimed in claim 1 ~~or 2~~, ~~characterized~~ wherein ~~in that~~ the method also comprises a step of changing the flux of the synchronous machine and performing the definition of the stator voltage ($\overline{u}_s$), stator current ($\overline{i}_s$), and electrical angular velocity (ω) of the machine, and the definition of quadrature-axis magnetizing inductance (L_{mq}) based thereon repeatedly as the flux changes.

4.   (Currently Amended) A method as claimed in claim 3, ~~characterized~~ wherein ~~in that~~ the flux of the synchronous machine is changed step by step, and the measurements are made after each stepwise change.

5.   (Currently Amended) A method as claimed in claim 3 ~~or 4~~, ~~characterized~~ wherein ~~in that~~ the method also comprises a step of accelerating the speed of the machine.

6.   (Currently Amended) A method as claimed in claim 1 ~~or 2~~, ~~characterized~~ wherein ~~in that~~ the start-up of the machine comprises a step of starting the machine at a limited load angle.

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7.   (Currently Amended) A method as claimed in ~~any one of the preceding claims 1 to 2~~ claim 1, ~~c h a r a c t e r i z e d~~ wherein ~~in that~~ keeping the rotor current of the machine substantially at zero comprises a step of shorting out the rotor coils, opening them or equipping them with a resistor, or of feeding the rotor coils from a current supply.

8.   (Currently Amended) A method as claimed in ~~any one of the preceding claims 1 to 7~~ claim 1, ~~c h a r a c t e r i z e d~~ wherein ~~in that~~ the quadrature-axis magnetizing inductance (L_{mq}) of the synchronous machine is calculated by formula $L_{mq} = -\dfrac{u_{sd}}{\omega i_{sq}} - L_{s\sigma}$,

wherein u_{sd} is the direct-axis component of the stator voltage, ω is the electrical angular velocity of the motor, i_{sq} is the quadrature-axis component of the stator current, and $L_{s\sigma}$ is the known leakage inductance of the stator.

9.   (Currently Amended) A method as claimed in ~~any one of the preceding claims 1 to 7~~ claim 1, ~~c h a r a c t e r i z e d~~ wherein ~~in that~~ the definition of the quadrature-axis magnetizing inductance of the synchronous machine comprises the steps of

calculating by means of the quadrature-axis magnetizing inductance (L_{mq}), known leakage inductance ($L_{s\sigma}$) of the stator, electrical angular velocity (ω) of the motor and the defined direct-axis component (i_{sq}) of the stator current an estimate ($u_{sd,est}$) for the direct-axis component of the stator voltage by using the formula the $u_{sd,est} = -\omega i_{sq}\left(L_{mq} + L_{s\sigma}\right)$,

comparing the estimate ($u_{sd,est}$) of the stator voltage direct-axis component with the defined stator voltage (u_{sd}), and

correcting the magnitude of the quadrature-axis magnetizing inductance (L_{mq}) on the

basis of the comparison.

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